

Claims

- [c1] 1. A fin deployment system for attachment to a projectile having a main axis, comprising:
a plurality of fins;
a plurality of hinges attached to an aft section of the projectile to rotate the fins from a stowed position to a deployed position after the projectile is launched;
a retention cover attached to the aft section of the projectile to cover and retain the fins while the projectile is in storage and before the projectile is launched;
wherein the fins wrap around the aft section prior to deployment, and deploy radially relative to the projectile main axis.
- [c2] 2. The system of claim 1, wherein the plurality of fins comprise at least three fins.
- [c3] 3. The system of claim 1, further comprising a fin cover that provides retention of the fins while in the stowed position.
- [c4] 4. The system of claim 3, wherein the fin cover comprises a pressure reservoir that uses a propellant gas to deploy after the projectile is launched to release the fins

into the deployed position.

- [c5] 5. The system of claim 4, wherein the fin cover further comprises a plurality of pressure equalization holes disposed radially, peripherally, externally, relative to the fin cover, to provide pressure mitigation for the fin cover, to permit the fin cover to selectively deploy after launch.
- [c6] 6. The system of claim 5, wherein during launch, the propellant gas generates a net pressure force that maintains the fin cover in contact with the aft section.
- [c7] 7. The system of claim 1, further comprising a lock mechanism connected to the hinges to lock the fins in the deployed position.
- [c8] 8. The system of claim 7, wherein the lock mechanism comprises a locking pin that penetrates the hinges and terminates into the aft section.
- [c9] 9. The system of claim 8, wherein the locking pin includes tapered, cylindrical body with a rounded nose, to minimize lock tolerance.
- [c10] 10. The system of claim 9, wherein the locking pin further includes a post which, during launch, provides support for a lock pin spring.
- [c11] 11. The system of claim 1, wherein the aft section in-

cludes an outside profile that provides a wrapping surface for the plurality of fins;
wherein the plurality of fins include a plurality of fin blades; and
wherein the wrapping surface further provides a support for the fin blades when the fins are in a stowed position.

[c12] 12. The system of claim 11, wherein the aft section comprises pressure release slots disposed radially around the aft section, to provide pressure release from the fins for deployment of the fins, in order to mitigate a deployment velocity of the fins.

[c13] 13. The system of claim 1, wherein the fins are made of a super-elastic material.